IN THE CLAIMS:

Please amend claim 8 and add new claim 19 as follows:

1. (Previously presented) A method of synthesizing bulk quantities of oxide nanowires of crystalline noncatalytic low melting metals, comprising the steps of:

placing said film of noncatalytic low-melting metal on a substrate in a low pressure chamber;

exposing said noncatalytic low melting metal and to a microwave plasma containing a mixture of a monoatomic oxygen and a monoatomic hydrogen heated to a temperature above the melting point of said low-melting metal;

forming a film of molten low-melting metal on said substrate;

activating and decomposing the gas phase and exposing to selected amounts of hydrogen and oxygen in a gas phase;

forming multiple nucleations and growth of noncatalytic low melting metal nanostructures directly therefrom creating highly crystalline metal oxide nanowires devoid of any structural defects said nanowires having a range of from 20 to 100 nanometers thick and a range of from ten to a thousand microns long.

2. (Preciously presented) The method of synthesizing bulk quantities of highly crystalline noncatalytic low melting metal nanowires of claim 1, wherein said crystalline metal oxide nanowires comprises β-gallium oxide tubes, nanowires, and nano-paintbrushes.

3. (Previously presented) The method of claim 1, wherein nuclei aggregate to form a polycrystalline crust on said molten low-melting metal surface with at least some nuclei segregation on said molten low-melting metal surface preventing complete crust formation whereby nuclei grow in one dimension upon basal attachment to said low-melting metal.

4. (Previously presented) The method of claim 1, wherein said substrate is selected from the group consisting of quartz, alumina, pyrolytic boron nitride, glassy carbon, polycrystalline diamond

film, porous graphite, and sapphire.

5. (Previously presented) The method of claim 1, further comprising the step of controlling hydrogen/oxygen chemistry enabling nuclei segregation on a surface of said molten low-melting metal preventing complete crust formation and forming nuclei growing in one dimension upon basal attachment of a bulk growth species.

6. (Previously presented) The method of claim 1, further comprising the step of controlling the dynamics of the pattern formation and the time of nuclei coalescence to determine the morphology of the resulting structure.

7. (Previously presented) The method of claim 6, further comprising manipulating the composition , structure, and morphology of said nanowires by controlling the gas phase chemistry.

8. (Currently Amended) The method of claim 1, wherein said low melting metals comprises Ga, In, Al, Sn, Zn, $\underline{Ga_2O_3}$, A_2O_3, In_2O_3, SnO_2, Zn/ZnO, and combinations thereof.

9. (Previously presented) The method of claim 1, wherein said low melting metal spontaneously oxidizes at a very moderate oxygen partial pressure.

10 (Previously presented) The method of claim 1, further comprising means for inhibiting spontaneous nucleation and growth of the metal oxide crust on the molten metal surface.

11. (Previously presented) The method of claim 10, wherein hydrogen/oxygen chemistry enables nuclei segregation on the melt surface preventing the complete crust formation.

12. (Previously presented) A process for synthesizing bulk amounts of semiconductor nanofibers, comprising the steps of:

forming a film of at least one low-melting metal on at least one selected substrate;

placing the low melting metal substrate combination in a low-pressure chamber;

adding gaseous reactant to said low-pressure chamber;

applying energy to raise the temperature in said chamber to a point above the melting point of said at least one low- melting metal;

activating and decomposing the gas phase to yield growth precursors and exposing the molten metal film to the activated gas phase until multiple nanofibers are formed of the desired thickness or length.

13. (Previously presented) The method of claim 12, wherein said crystalline metal oxide nanowires comprises β-gallium oxide tubes, nanowires, and nano-paintbrushes.

14. (Previously presented) The method of claim 12, wherein nuclei aggregate to form a polycrystalline crust on said molten low-melting metal surface with at least some nuclei segregation on said molten low-melting metal surface preventing complete crust formation whereby nuclei grow in one dimension upon basal attachment to said low-melting metal.

15. (Previously presented) The method of claim 12, wherein said substrate is selected from the group consisting of quartz, alumina, pyrolytic boron nitride, glassy carbon, polycrystalline diamond film, porous graphite, and sapphire.

16. (Previously presented) The method of claim 12, further comprising the step of controlling hydrogen/oxygen chemistry enabling nuclei segregation on a surface of said molten low-melting metal preventing complete crust formation and forming nuclei growing in one dimension upon basal attachment of a bulk growth species.

17. (Previously presented) The method of claim 12, further comprising the step of controlling the dynamics of the pattern formation and the time of nuclei coalescence to determine the morphology of the resulting structure.

18. (Previously presented) The method of claim 12, further comprising manipulating the composition , structure, and morphology of said nanowires by controlling the gas phase chemistry.

– 19. (New) The method of claim 12, where in said pressure is 40 Torr.--

20. (Previously presented) The method of claim 12, wherein said low melting metals comprises Ga, In, Al, Sn, and Zn.

21. (Previously presented) The method of claim 12, wherein said low melting metal spontaneously oxidizes at a very moderate oxygen partial pressure.

22 (Previously presented) The method of claim 12, further comprising means for inhibiting spontaneous nucleation and growth of the metal oxide crust on the molten metal surface.

23. (Previously presented) The method of claim 12, wherein hydrogen/oxygen chemistry enables nuclei segregation on the melt surface preventing the complete crust formation.

24 (Previously presented) The method of claim 12, wherein said pressure ranged from 30 to 60 Torr.

25 (Previously presented) The method of claim 1, wherein said pressure ranged from 30 to 60 Torr.

26. (Previously presented) A process for synthesizing bulk amounts of oxide nanowires of low melting metals, the steps comprising:

forming a film of low-melting metals on a substrate;

placing the low-melting metal substrate combination in a low-pressure chamber;

adding gaseous reactant to said low-pressure chamber;

applying energy to raise the temperature in the chamber to a point above the melting point

of said low-melting metal;

activating and decomposing the gas phase and exposing the molten low-melting metal film to said activated gas phase for a selected time period forming multiple nanofibers of the desired size.

27. (Previously presented) The process of claim 26, wherein said substrate comprises fused silica quartz.

28. (Previously presented) The process of claim 26, wherein said low-melting metal comprises gallium.

29 . (Previously presented) The process of claim 26, wherein said gaseous reactant comprises atomic hydrogen, oxygen, nitrogen, and chlorine.

30. (Previously presented) The process of claim 28, wherein said nanofibers comprises gallium oxide.

31. (Previously presented) The process of claim 26, wherein said low-melting metal comprises gallium, indium, aluminum, zinc, tin, their oxides, and combinations thereof.

32 (Previously presented) The process of claim 26, wherein said gaseous reactant is selected from the group consisting of hydrogen, nitrogen, chlorine, oxygen and combinations thereof.

33. (Previously presented) The process of claim 26, wherein said substrate comprises quartz, alumina, pyrolytic boron nitride, glassy carbon, polycrystalline diamond film, porous graphite, sapphire, and combinations thereof.

34. (Previously presented) The process of claim 26, wherein the energy means provided to raise the substrate temperature and to activate and decompose said gas phase comprises a microwave.

35. (Previously presented) The process of claim 1, wherein said substrate is heated to a temperature between the melting point and the boiling point of said low-melting metal.

36. (Previously presented) The process of claim 26, wherein said low-melting metal film comprises the shape of a droplet.

37. (Previously presented) The process of claim 26, wherein said low-melting metal film comprises the shape of a film.

38 (Previously presented) The process of claim 26, further comprising the step of applying hydrogen for promoting oxide nanowires growth by etching surface-segregated solid gallium oxide nuclei and inhibiting the lateral growth of surface nuclei by agglomeration.

39 (Previously presented) The process of claim 26, wherein the thickness of the metal nanowires range in thickness from 20 to 100 nanometers thick.

40 (Previously presented) The process of claim 26, wherein the length of the metal nanowires range from 10 to 1000 nanometers long.

Please add the following new claims 41-69 as follows:

--41. (New) A method of synthesizing bulk quantities of crystalline metal oxide nanowires from noncatalytic low melting metals, comprising the steps of:

placing a noncatalytic low-melting metal on a substrate in a low pressure chamber;

simultaneously exposing said noncatalytic low melting metal to a microwave plasma containing oxygen and hydrogen heated to a temperature above the melting point of said low-melting metal forming a molten low-melting metal on said substrate and activating and decomposing an effective amount of said oxygen and said hydrogen creating monoatomic hydrogen and monoatomic oxygen in a gas phase thereby exposing said molten low-melting metal to a sufficient

amount of said monoatomic hydrogen and said monoatomic oxygen in said gas phase for forming a metal oxide;

forming multiple nucleations and growing noncatalytic low melting metal oxide nanostructures directly therefrom creating crystalline metal oxide nanowires devoid of any structural defects..--

--42. (New) The method of claim 41, wherein said crystalline metal oxide nanowires comprises β-gallium oxide tubes, nanowires, and nano-paintbrushes.--

--43. (New) The method of claim 41, wherein nuclei aggregate forming a polycrystalline crust on a molten low-melting metal surface with at least some nuclei segregation on said molten low-melting metal surface preventing complete crust formation whereby nuclei grow in one dimension upon basal attachment to said low-melting metal.--

–44. (New) The method of claim 41, wherein said substrate is selected from the group consisting of quartz, alumina, pyrolytic boron nitride, glassy carbon, polycrystalline diamond film, porous graphite, and sapphire.--

–45. (New) The method of claim 41, further comprising the step of controlling hydrogen/oxygen chemistry enabling nuclei segregation on a molten low-melting metal surface preventing complete crust formation and forming nuclei growing in one dimension upon basal attachment of a bulk growth species.--

–46. (New) The method of claim 41, further comprising the step of controlling the dynamics of the pattern formation and the time of nuclei coalescence to determine the morphology of the resulting structure.--

–47. (New) The method of claim 46, further comprising manipulating the composition, structure, and morphology of said nanowires by controlling the gas phase chemistry.--

–48. (New) The method of claim 41, wherein said low melting metals comprises Ga, In, Al, Sn, Zn, Ga_2O_3, A_2O_3, In_2O_3, SnO_2, Zn/ZnO, and combinations thereof.--

–49. (New) The method of claim 41, wherein said low melting metal spontaneously oxidizes at a very moderate oxygen partial pressure.--

–50 (New) The method of claim 41, further comprising means for inhibiting spontaneous nucleation and growth of the metal oxide crust on the molten metal surface.--

–51. (New) The method of claim 50, wherein hydrogen/oxygen chemistry enables nuclei segregation on the melt surface preventing the complete crust formation.--

–53. (New) The method of claim 41, said molten low melting forming a film on said substrate.--

–54. (New) The method of claim 41, said molten low melting forming a drop on said substrate.--

–55. (New) The method of claim 41, including the step of forming said nanowires having a range of from 20 to 100 nanometers in diameter and a range of from ten to a thousand microns in length.--

–56. (New) A method of synthesizing bulk quantities of crystalline metal oxide nanowires from noncatalytic low melting metals, comprising the steps of:

placing a noncatalytic low-melting metal on a substrate in a low pressure chamber;

simultaneously exposing said noncatalytic low melting metal to a microwave plasma containing monoatomic oxygen and monoatomic hydrogen in a gas phase heated to a temperature above the melting point of said low-melting metal forming a molten low-melting metal on said

substrate and exposing said molten low-melting metal to a sufficient amount of said monoatomic hydrogen and said monoatomic oxygen in said gas phase for forming a metal oxide;

forming multiple nucleations and growing noncatalytic low melting metal oxide nanostructures directly therefrom creating crystalline metal oxide nanowires devoid of any structural defects..--

–57. (New) The method of claim 56, wherein said crystalline metal oxide nanowires comprises β-gallium oxide tubes, nanowires, and nano-paintbrushes.--

–58. (New) The method of claim 56, wherein nuclei aggregate forming a polycrystalline crust on a molten low-melting metal surface with at least some nuclei segregation on said molten low-melting metal surface preventing complete crust formation whereby nuclei grow in one dimension upon basal attachment to said low-melting metal.--

–59. (New) The method of claim 56, wherein said substrate is selected from the group consisting of quartz, alumina, pyrolytic boron nitride, glassy carbon, polycrystalline diamond film, porous graphite, and sapphire.--

–60. (New) The method of claim 56, further comprising the step of controlling hydrogen/oxygen chemistry enabling nuclei segregation on a molten low-melting metal surface preventing complete crust formation and forming nuclei growing in one dimension upon basal attachment of a bulk growth species.--

–61. (New) The method of claim 56, further comprising the step of controlling the dynamics of the pattern formation and the time of nuclei coalescence to determine the morphology of the resulting structure.--

–62. (New) The method of claim 56, further comprising manipulating the composition, structure, and morphology of said nanowires by controlling the gas phase chemistry.--

–63. (New) The method of claim 56, wherein said low melting metals comprises Ga, In, Al, Sn, Zn, Ga_2O_3, A_2O_3, In_2O_3, SnO_2. Zn/ZnO, and combinations thereof.--

–64. (New) The method of claim 56, wherein said low melting metal spontaneously oxidizes at a very moderate oxygen partial pressure.--

–65 (New) The method of claim 56, further comprising means for inhibiting spontaneous nucleation and growth of the metal oxide crust on the molten metal surface.--

–66. (New) The method of claim 56, wherein hydrogen/oxygen chemistry enables nuclei segregation on the melt surface preventing the complete crust formation.--

–67. (New) The method of claim 56, said molten low melting forming a film on said substrate.--

–68. (New) The method of claim 56, said molten low melting forming a drop on said substrate.--

–69. (New) The method of claim 56, including the step of forming said nanowires having a range of from 20 to 100 nanometers in diameter and a range of from ten to a thousand microns in length.--